



# Quantum and Non-Equilibrium Processes Division



**5 March 2013**

**Dr. William “Pat” Roach**

**Division Chief**

**AFOSR/RTB**

**Air Force Research Laboratory**

***Integrity ★ Service ★ Excellence***

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# OVERVIEW

- Reorganization
- How we spend our money....
- PO's and their programs
- Summary and Conclusion

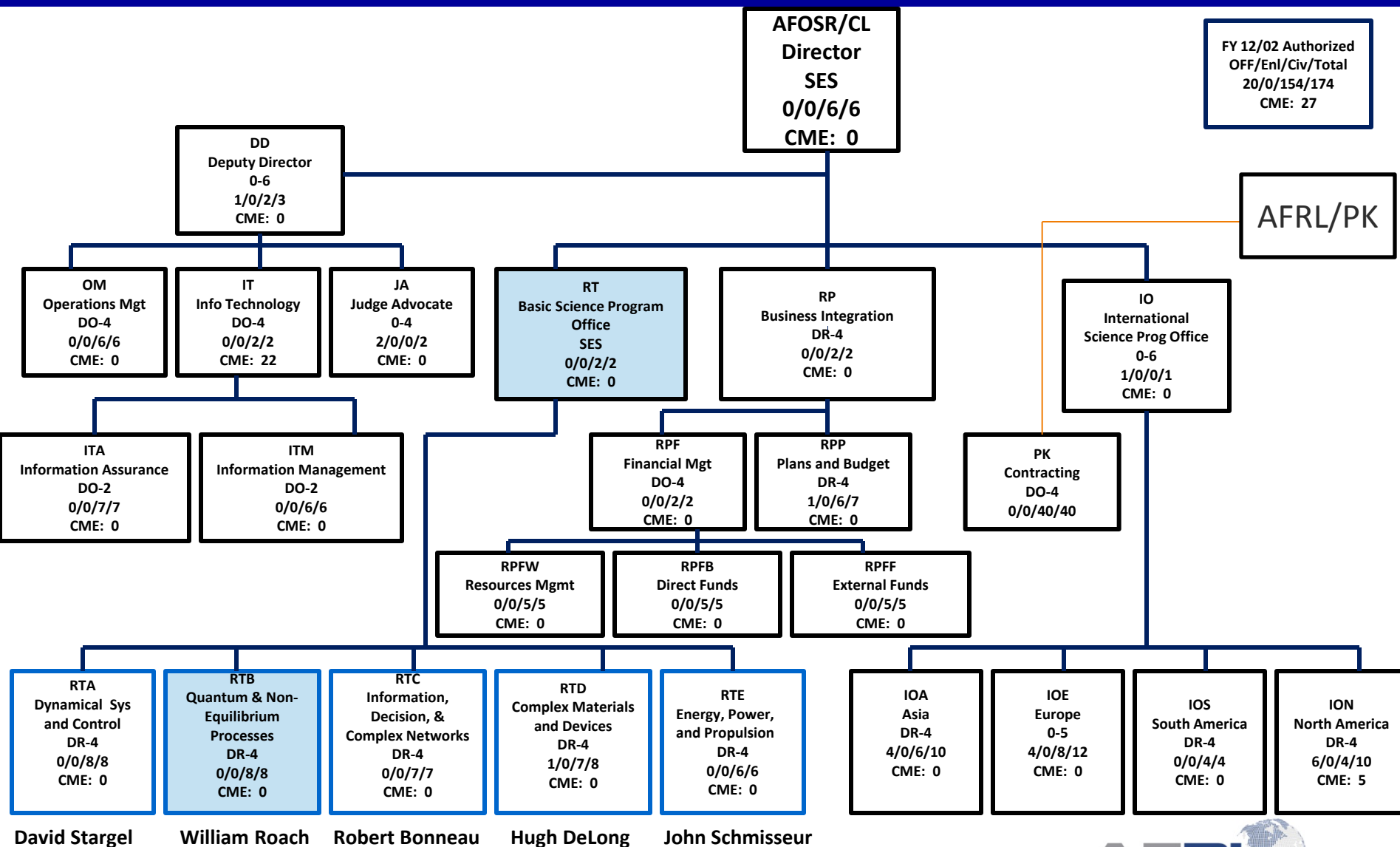


# Goals of Reorganization

- Maintain strong 6.1 focus and improve scientific quality across AFOSR
  - Maintain semi-autonomy for program managers as subject experts
  - Enhance responsiveness to rapidly changing scientific environment
- Improve the ability to collaborate across all AFOSR portfolios
- Improve the ability to collaborate across the International Enterprise



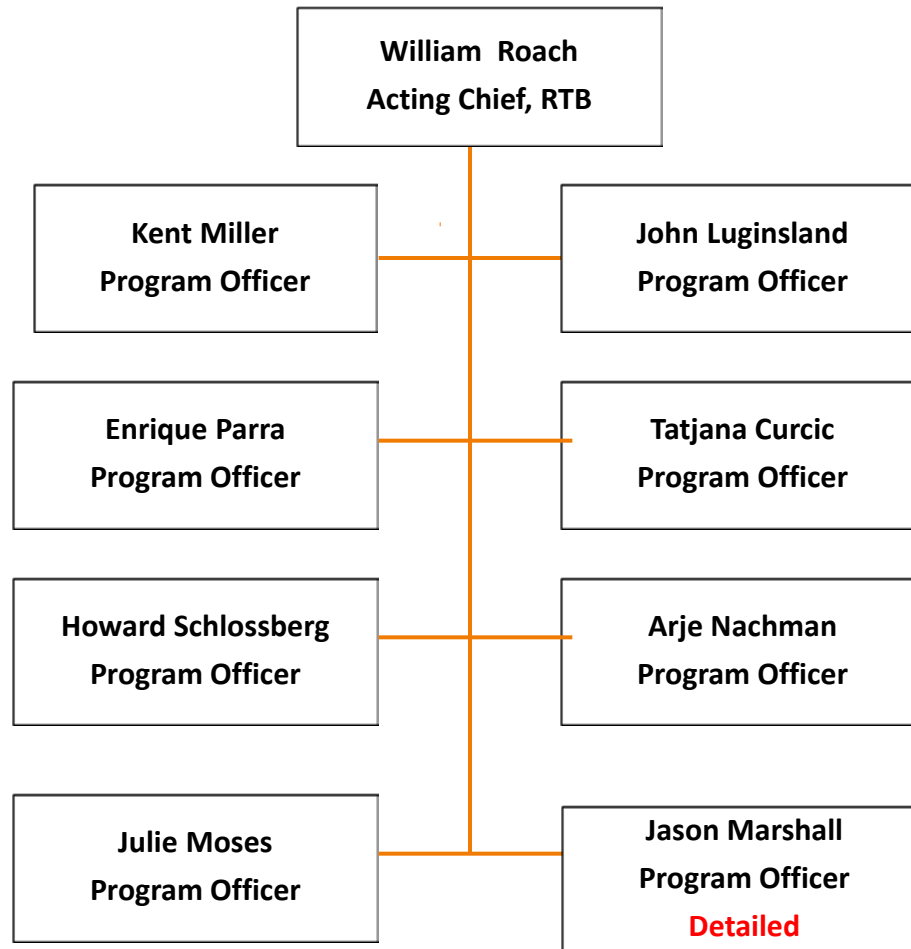
# AFOSR Reorganization





# RTB Organizational Chart

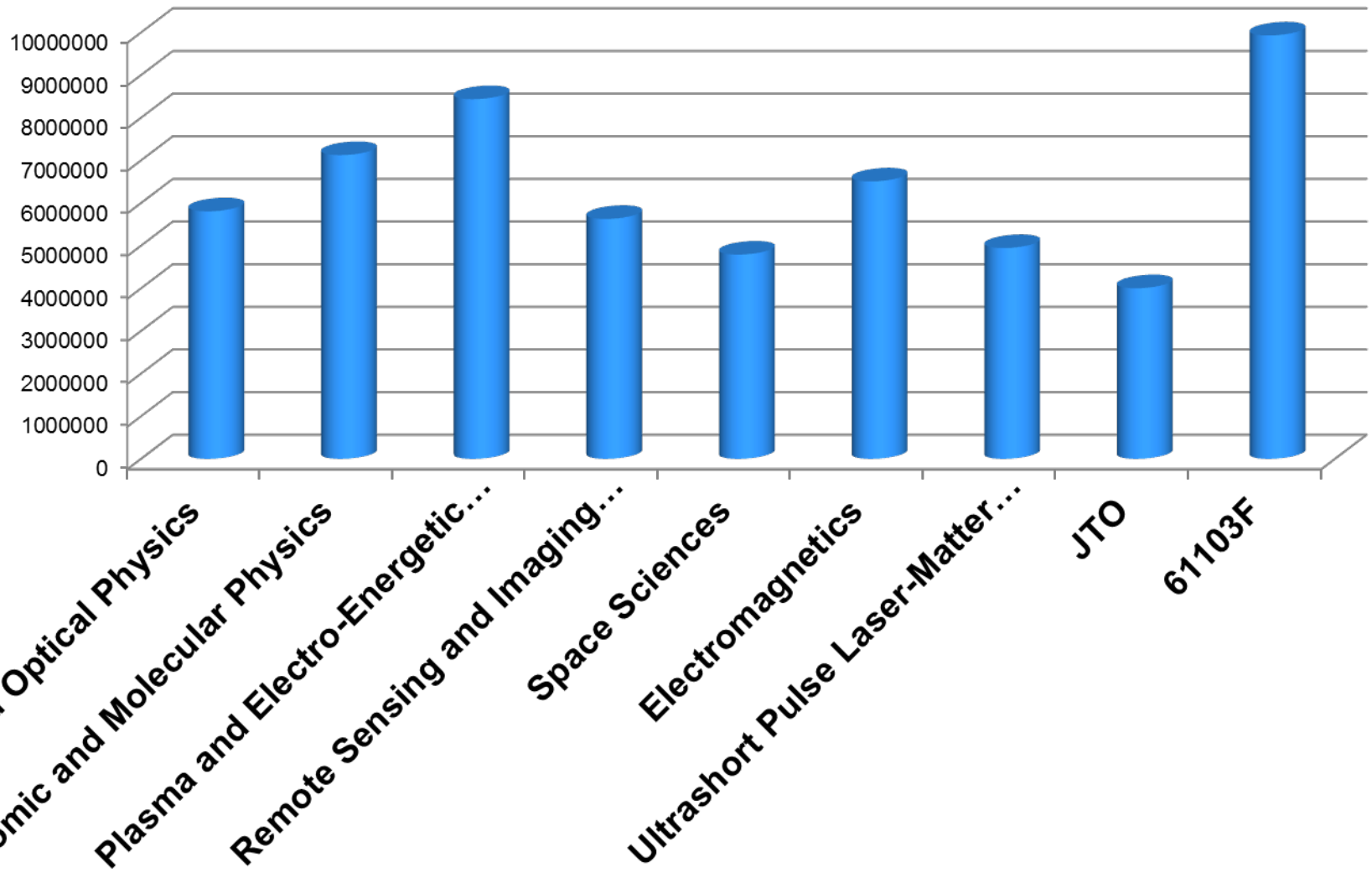
## Quantum & Non-Equilibrium Processes





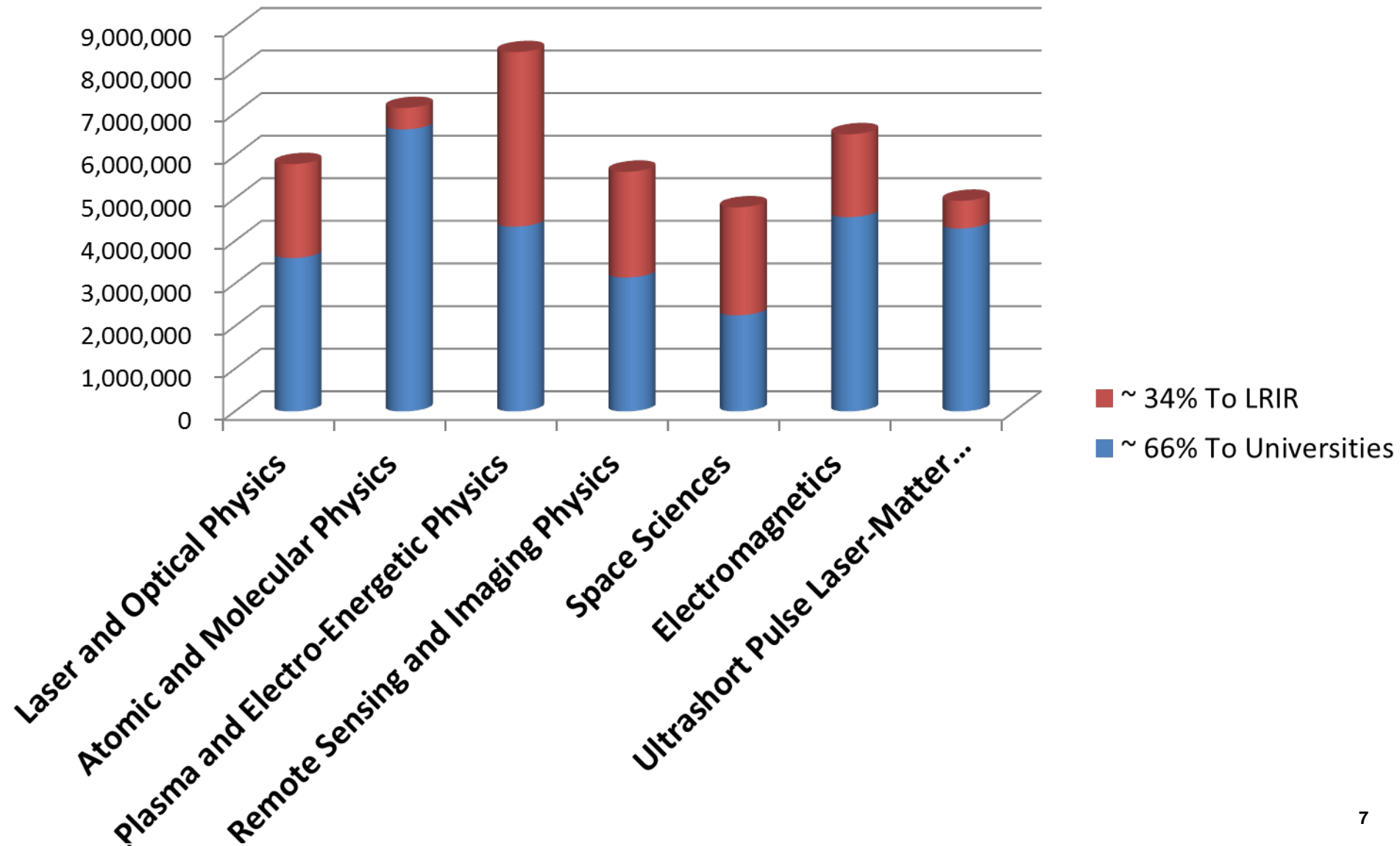
# Core + URI

Total RTB "Work" ~\$57M





# LRIR + CORE







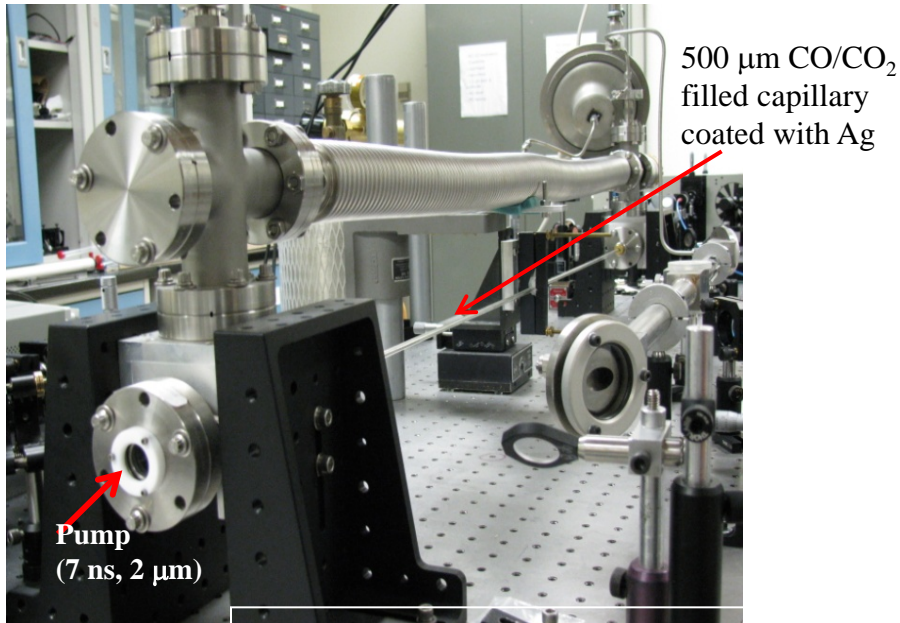
# RTB PO's Portfolio's



- **Dr. Howard Schlossberg**

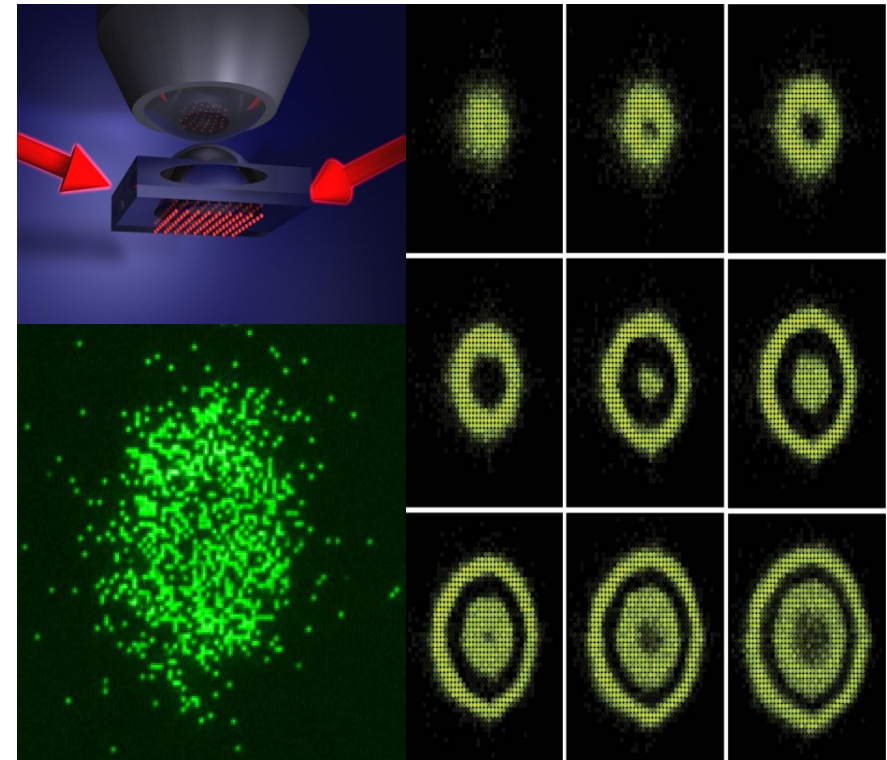
## Laser and Optical Physics

- High Average Power Solid-State Lasers
- Modest Power Lasers
- Nonlinear Optics
- Microplasma Arrays



- **Dr. Tatjana Curcic**

## Atomic and Molecular Physics



## Cold Atom Microscope

Markus Greiner, Harvard



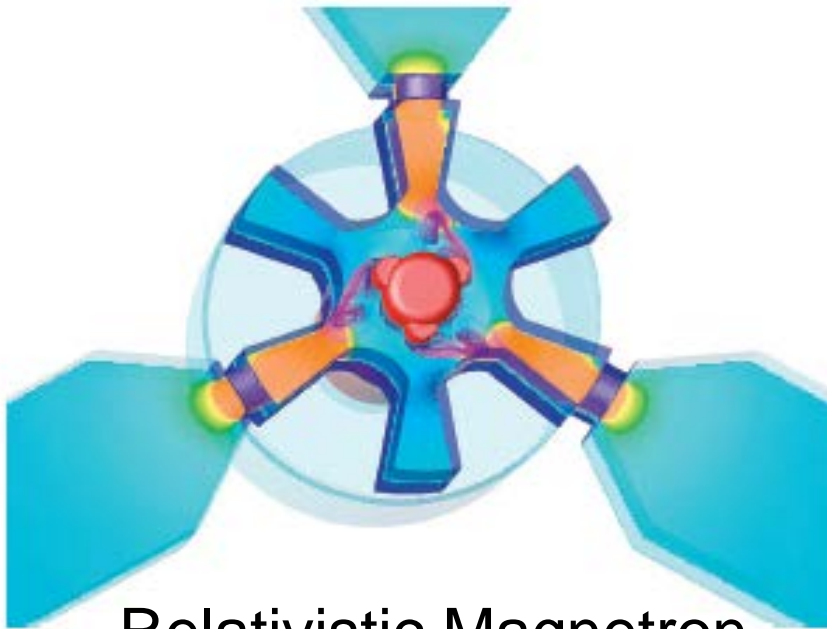
# RTB PO's Portfolio's



- **Dr. John Luginsland**

**Plasma & Electro-energetic  
Physics**

“Bumpy” Magnetron with ICEPIC

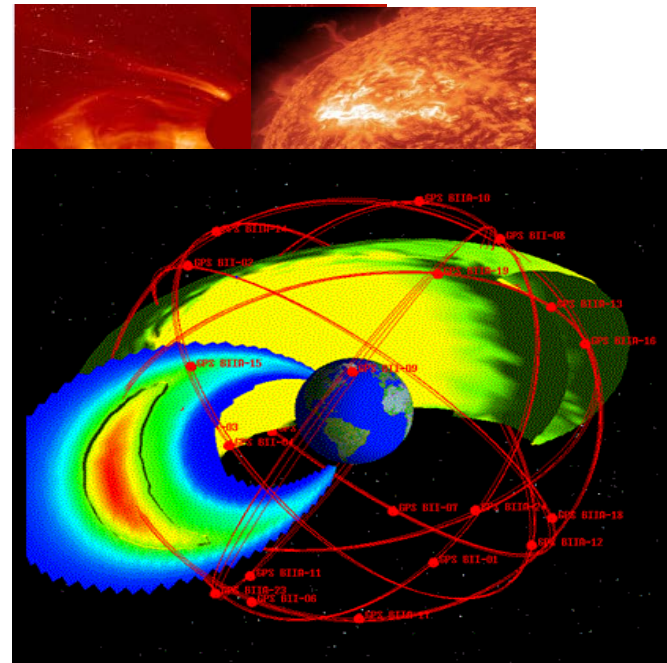


Relativistic Magnetron

Courtesy M. Bettencourt, AFRL/RDH

- **Dr. Kent Miller**

**Remote Sensing & Imaging  
Physics and Space Sciences**



Space Weather effects include:

- satellite drag
- radiation belt perturbations
- communication/navigation/surveillance



# RTB PO's Portfolio's

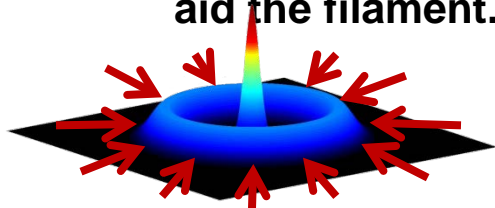


- **Dr. Arje Nachman**

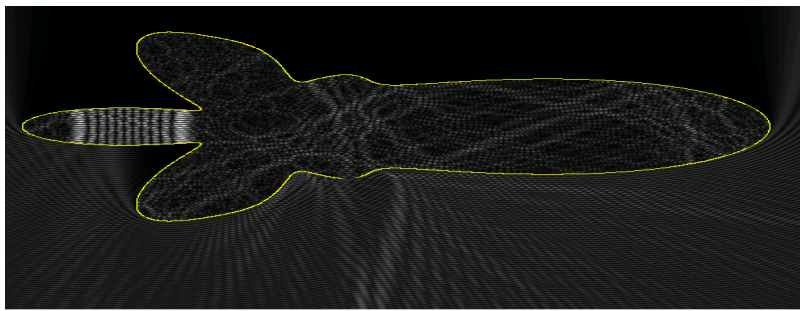
## Electromagnetics

Interrogation (Modeling/Simulation) of Linear/Nonlinear Maxwell's Eqns.

Energy from the dress flows inwards to aid the filament.



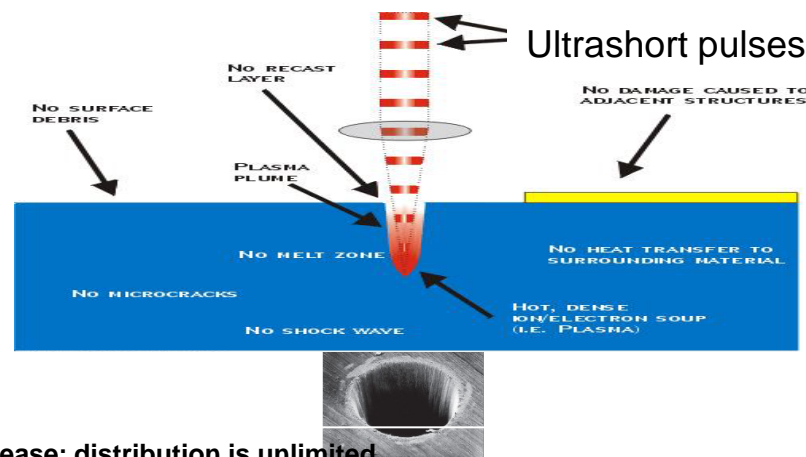
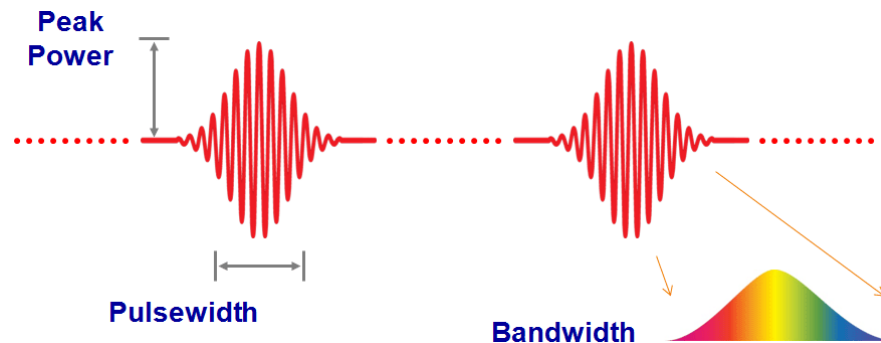
*Localized cavity field more intense than incident field & High sensitivity to parameters (e.g. incidence angle)*



- **Dr. Enrique Parra**

## Ultrashort Pulse Laser-Matter Interactions

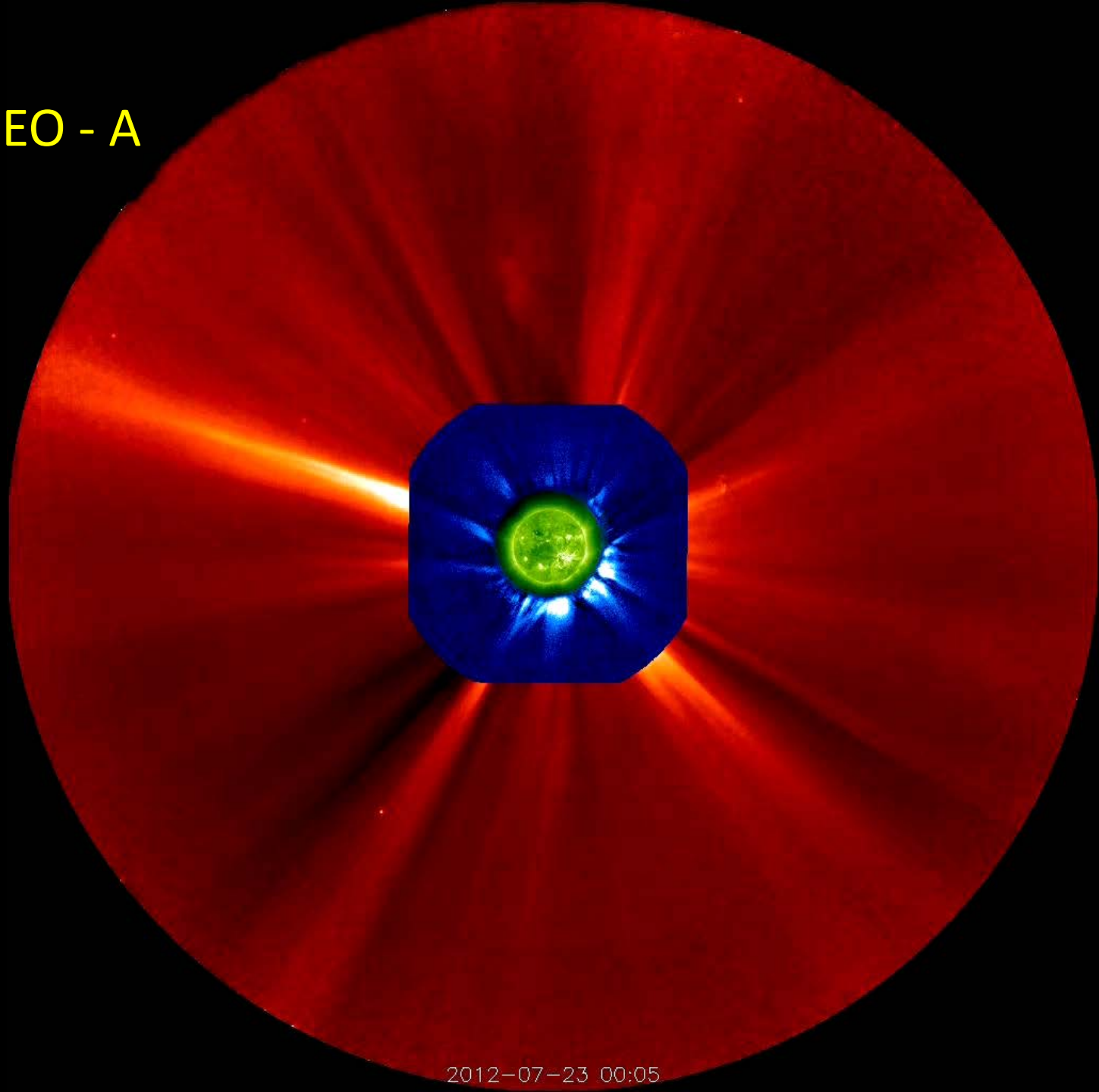
Understand and control light sources exhibiting extreme temporal, bandwidth and peak power characteristics.







STEREO - A



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# BACK UP SLIDES

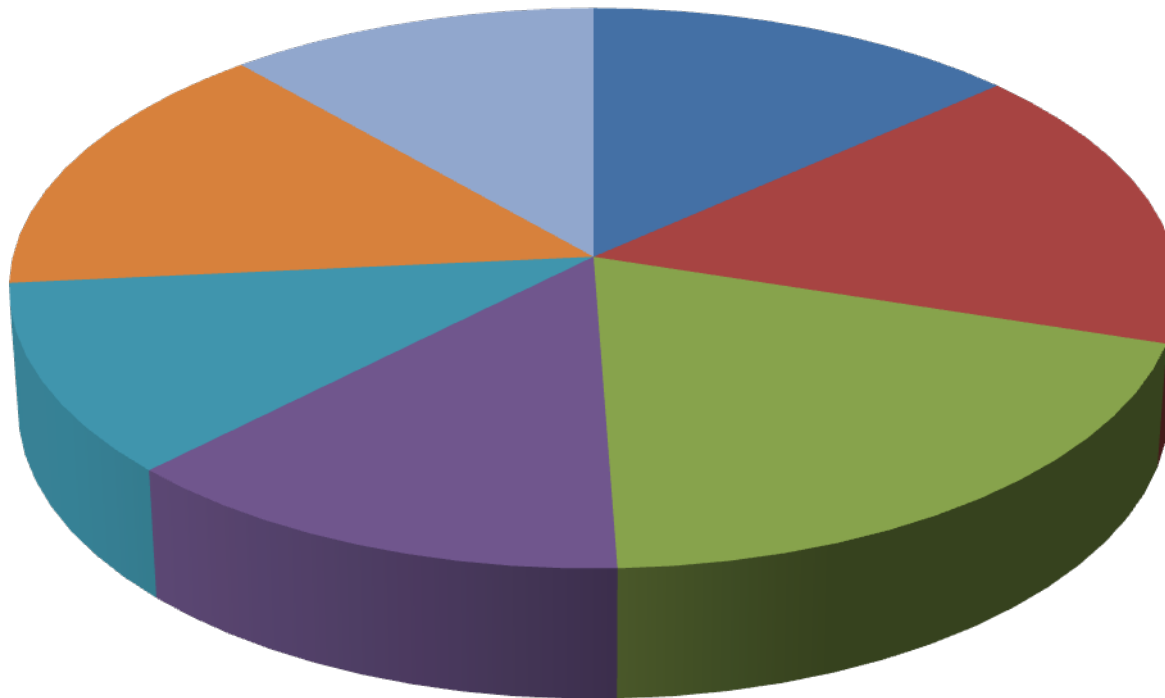




# Core Portfolio Profile



**AFOSR/RTB (\$43M on 61102F)**



- Laser and Optical Physics
- Atomic and Molecular Physics
- Plasma and Electro-Energetic Physics
- Remote Sensing and Imaging Physics
- Space Sciences
- Electromagnetics
- Ultrashort Pulse Laser-Matter Interactions